Washington State Department of Health

News Release

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New modeling report explores options for safer return to in-person learning

OLYMPIA – Today, the Washington State Department of Health (DOH) and the Institute for Disease Modeling (IDM) released a new report, the fourth in a series, that explores how to minimize COVID-19 introductions in schools, and what can be done to mitigate its spread within schools and the larger and community.

Key findings from IDM's new report:

- **The rate at which COVID-19 is introduced in the classroom is proportional to the prevalence of COVID-19 in the community.** For a given school population over a given period of time, a simple calculation based on these results can estimate the number of COVID-19 introductions a school can expect (within the limits of the model's assumptions).

- **K-5 is at lower risk of introductions compared to middle and high schools,** and the K-5 phase-in approach has a 25% lower introduction rate compared to a full 5-day-per-week schedule.

- **High schools are more likely to have large outbreaks than elementary or middle schools** due to reduced ability to maintain stable cohorts or groups of students, larger school size, and older students who are likely more susceptible to infection.

- **Vaccines against COVID provide high levels of protection to recipients, but because students are likely to be a main source of introductions, vaccinating all staff will not prevent COVID from entering schools.** Vaccinating staff can also reduce the size of typical outbreaks, but the impact is less than other countermeasures.

- **Few tools are available to reduce the introduction rate,** although high-frequency diagnostic screening of asymptomatic students, teachers and staff can reduce the introduction rate by as much as 50% where and when practical.

- **Many interventions can limit transmission among students, teachers, and staff within schools** and outbreaks will be small if countermeasures are sufficient to limit in-school transmission.

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- **Our findings appear consistent when applied to other counties in Washington State** that have different population age distributions and school sizes.

This new analysis by IDM entitled "Stepping Back to School" uses a detailed computer model of COVID-19 to explore the interplay between disease transmission inside and outside schools in three steps: 1) introduction to school, 2) spread within school, and 3) exportation from schools. This step-by-step approach enables new insights into risks and mitigation strategies that could be applied to different schools and community contexts here in Washington State and elsewhere.

Closing schools early in the COVID-19 pandemic has been associated with significant reductions in disease transmission at the community level, yet K-12 schools that have returned to in-person learning have reported few outbreaks. Here in Washington State, there have been only 84 reported events of in-school transmission out of 200,000 students engaged in on-site instruction through December. Three hundred and five (305) cases were linked to these clusters. This is a remarkably low rate of transmission with a median size of three people involved in each.

Much of the success in limiting the spread of COVID-19 in schools has been attributed to the effective implementation of countermeasures used in other settings such as masking, distancing, ventilation, hand washing and symptom screening. But as IDM's previous analyses have shown, schools are not islands; COVID-19 burden in the community is an important determinant of school-based risk.

"Modeling efforts like this can improve our understanding of how community transmission and school transmission of COVID-19 affect each other" said Lacy Fehrenbach, MPH, Deputy Secretary of COVID-19 Response. "This study supports what we've seen in the literature, the experience of Washington schools, and recent CDC guidance that while testing and vaccines can provide additional levels of disease mitigation in schools, consistent use of robust health and safety measures and lower community prevalence of COVID-19 are foundational to reducing risks to everyone – students, educators, staff, and their families."

"Taken together, our reports provide insights into the complex dynamics related to COVID-19 and reopening schools," said Daniel Klein, senior research scientist at IDM. "Even when teachers and staff are vaccinated, there are no zero-risk solutions. Yet the most durable finding across all of our analyses is that countermeasures and symptom screening – combined with

diagnostic testing in high-transmission settings – can effectively mitigate the spread of COVID-19 in our schools and communities."

For more, visit:

- CDC guidance on phased in-person instruction
- DOH COVID-19 School Outbreaks Report
- DOH K-12 Health and Safety Guidance
- DOH Toolkit for the Provision of In-Person Learning
- Learn to Return Playbook
- DOH data dashboard

- IDM School Reports
    - Maximizing education while minimizing risk: priorities and pitfalls for reopening schools
    - Schools are not islands: we must mitigate community transmission to reopen schools
    - Testing the waters: is it time to go back to school?

The Institute for Disease Modeling (IDM) at the Bill & Melinda Gates Foundation is an independent research institute that applies a variety of modeling and statistical approaches to inform efforts to control and eradicate diseases around the world. It does not advocate for solutions or make policy recommendations. IDM provides technical assistance in the form of COVID-19 modeling and analyses to the Washington Department of Health and other Washington government leaders in support of the state's pandemic response efforts. All of IDM's COVID-19 research and reports are available here.

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